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Understanding and Countering Emerging Threats to Critical Information: providing actionable data to state and local entities

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Agenda

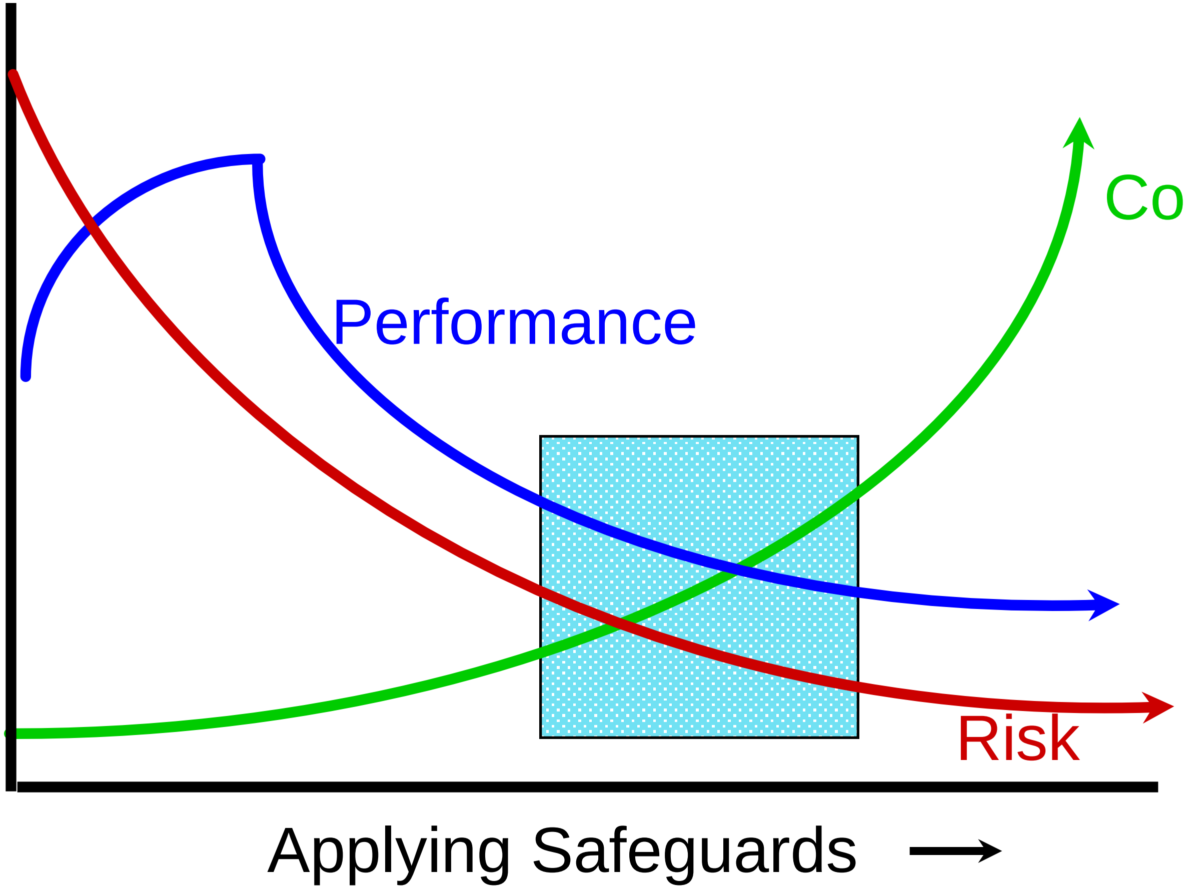
1 Understanding Threat within Risk Management

2 The Role of the Federal Government

3 ISTR XV – Threat Landscape

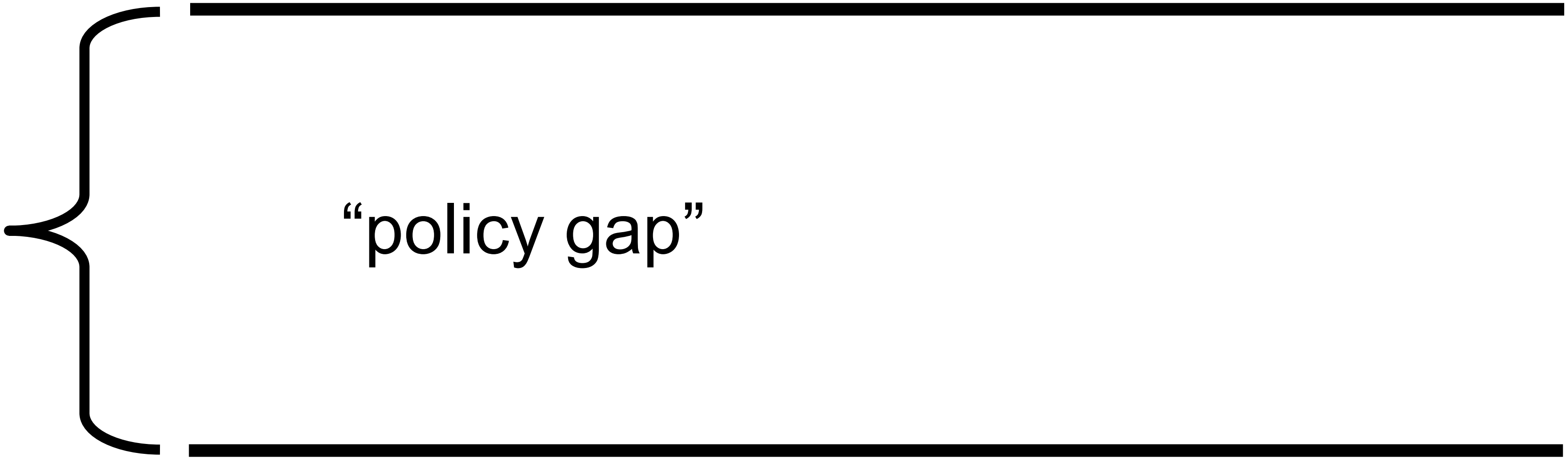
4 Defending Against Threats

Empirical Objective



Filling the Policy Gap

Policy – what you can define/mandate



“policy gap”

Technology tools – what you can enforce

Essential Elements of Risk

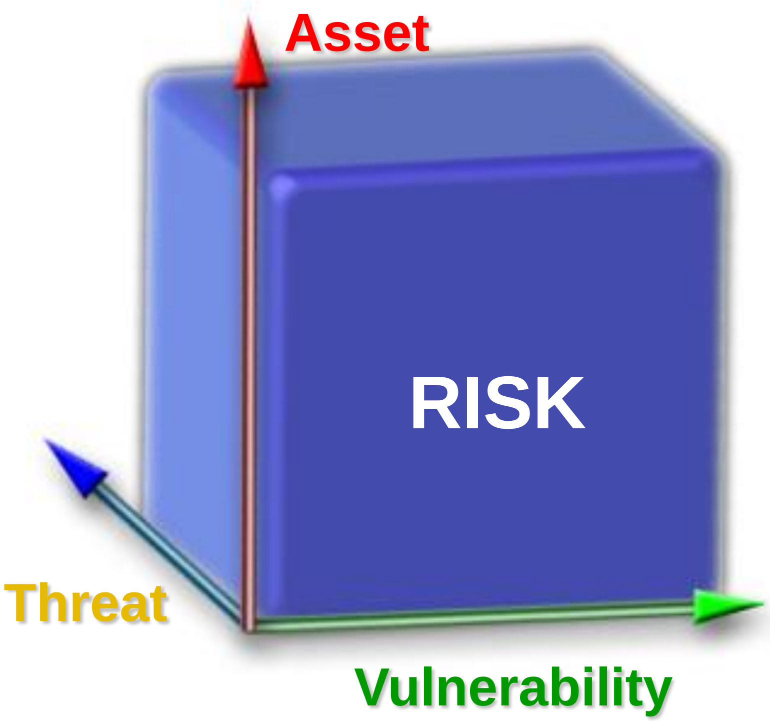
- Threats
- Assets
- Vulnerabilities
- Safeguards
  - Products
  - Procedures
  - People

The Risk Element Relationship

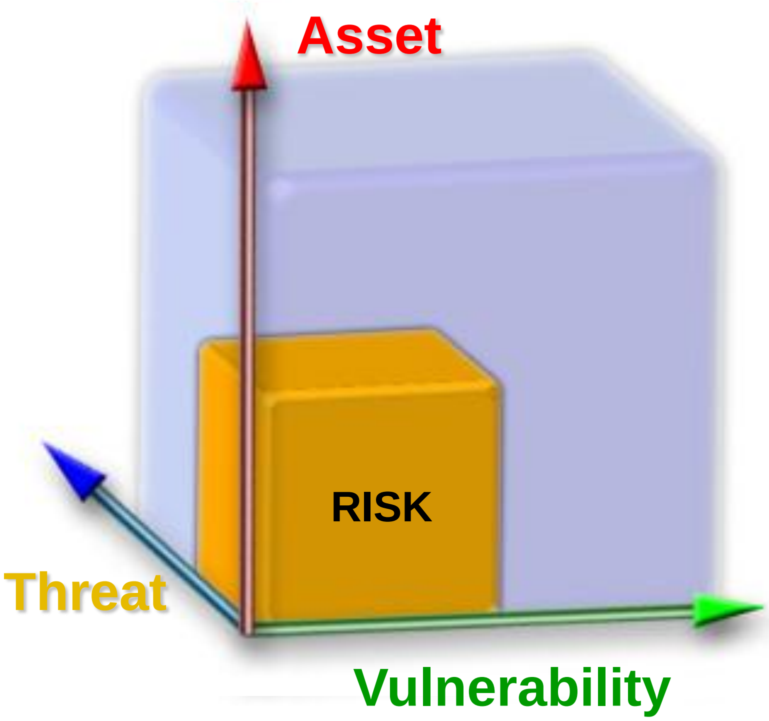
1: $$T \times V \times A = R_b$$

2: $$\frac{T \times V \times A}{S} = R_r$$

Mitigating Risk



Baseline Risk



Residual Risk after Safeguards Applied

The Role of the Federal Government

Fed’s “Should Do” List

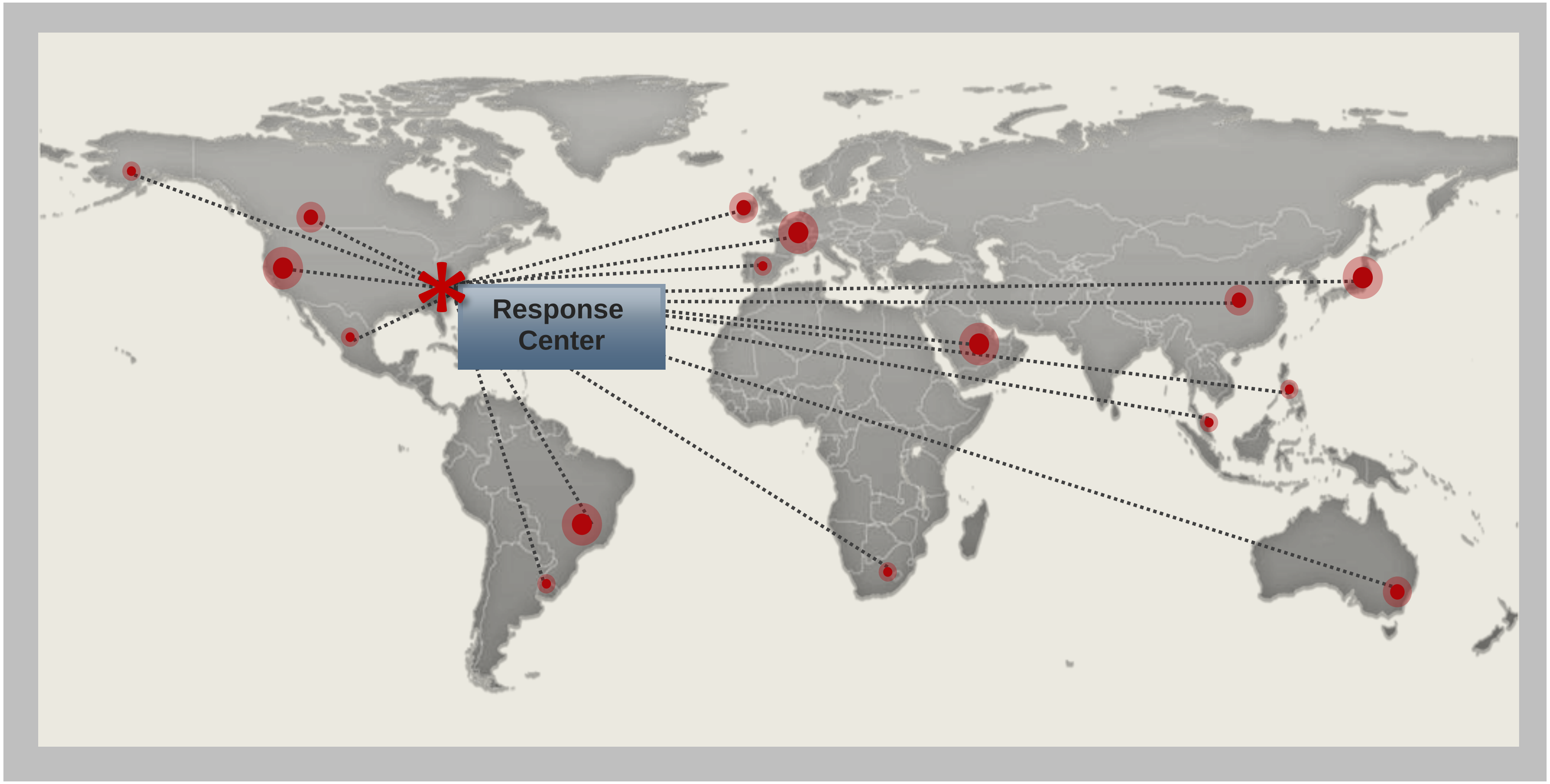
- Define the process of security, rather than an end-state
  - Risk management framework
  - On-going updates
  - Training and support
- Provide process tools
  - Codified and automated toolset
  - Maintain and manage the process
  - Training and more training
- Obtain and distribute required data as available
  - Vulnerabilities
  - Threats –both industry-provided and government specific

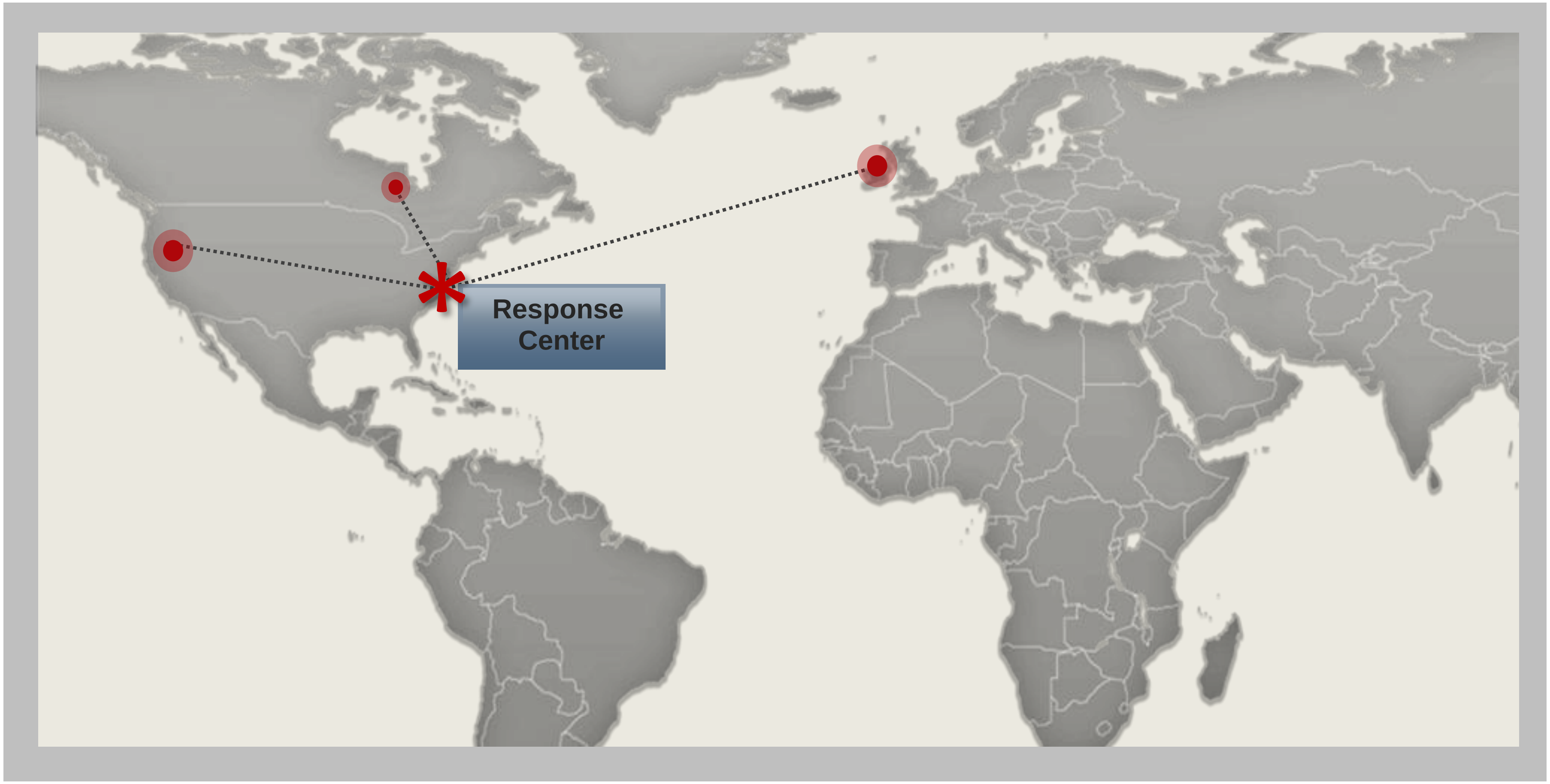
Fed’s “Should Not Do” List

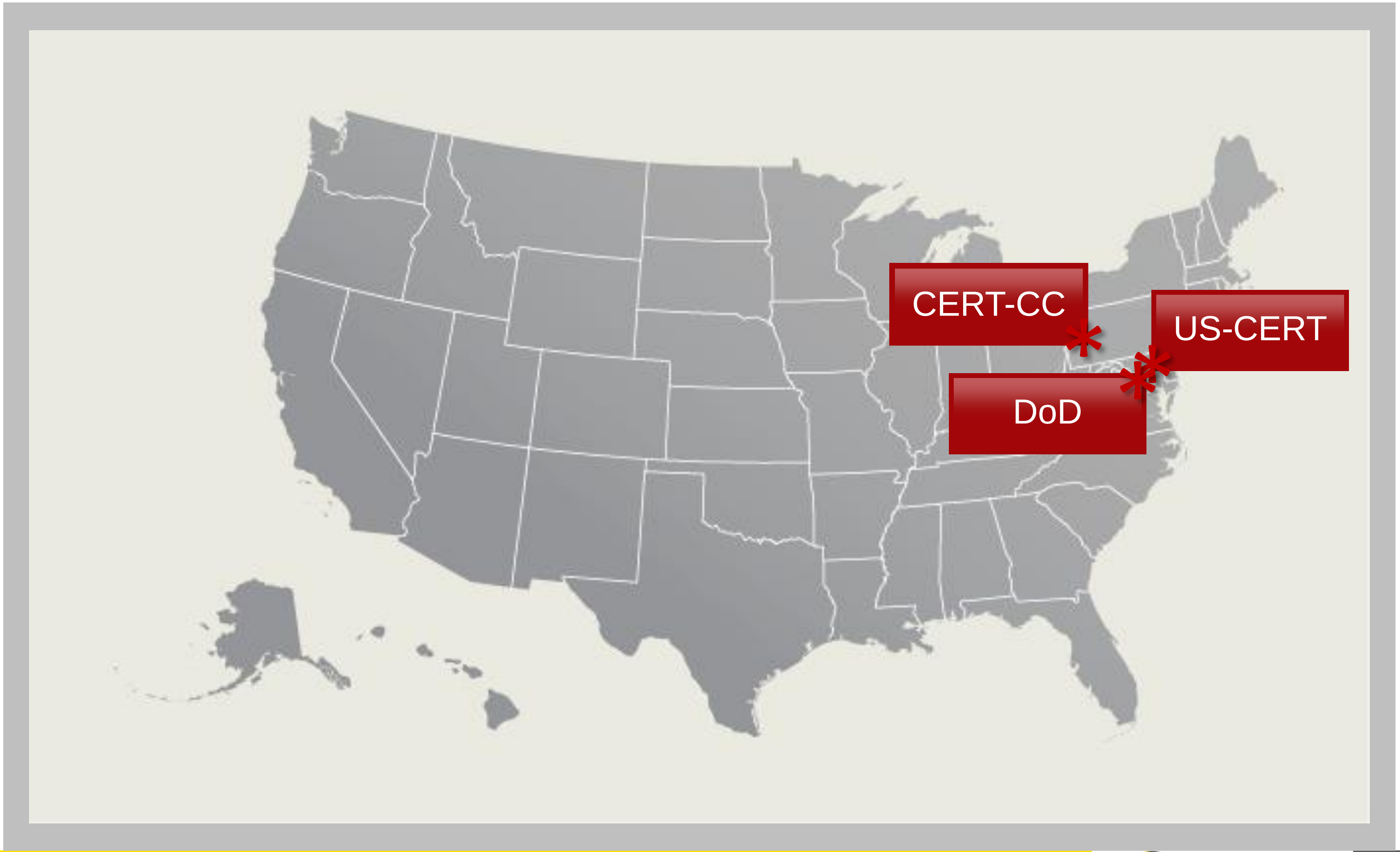
- Dictate a security end-state
  - One-size-fits-none
  - Require product evaluations that, when combined into a functioning system, are meaningless
  - Maintain unenforceable mandates and “approved” architectures
- Build and maintain what they can rent or buy
  - Vulnerability data
  - Threat data
  - Process tools
    - COTS
    - GOTS
- Over-classify

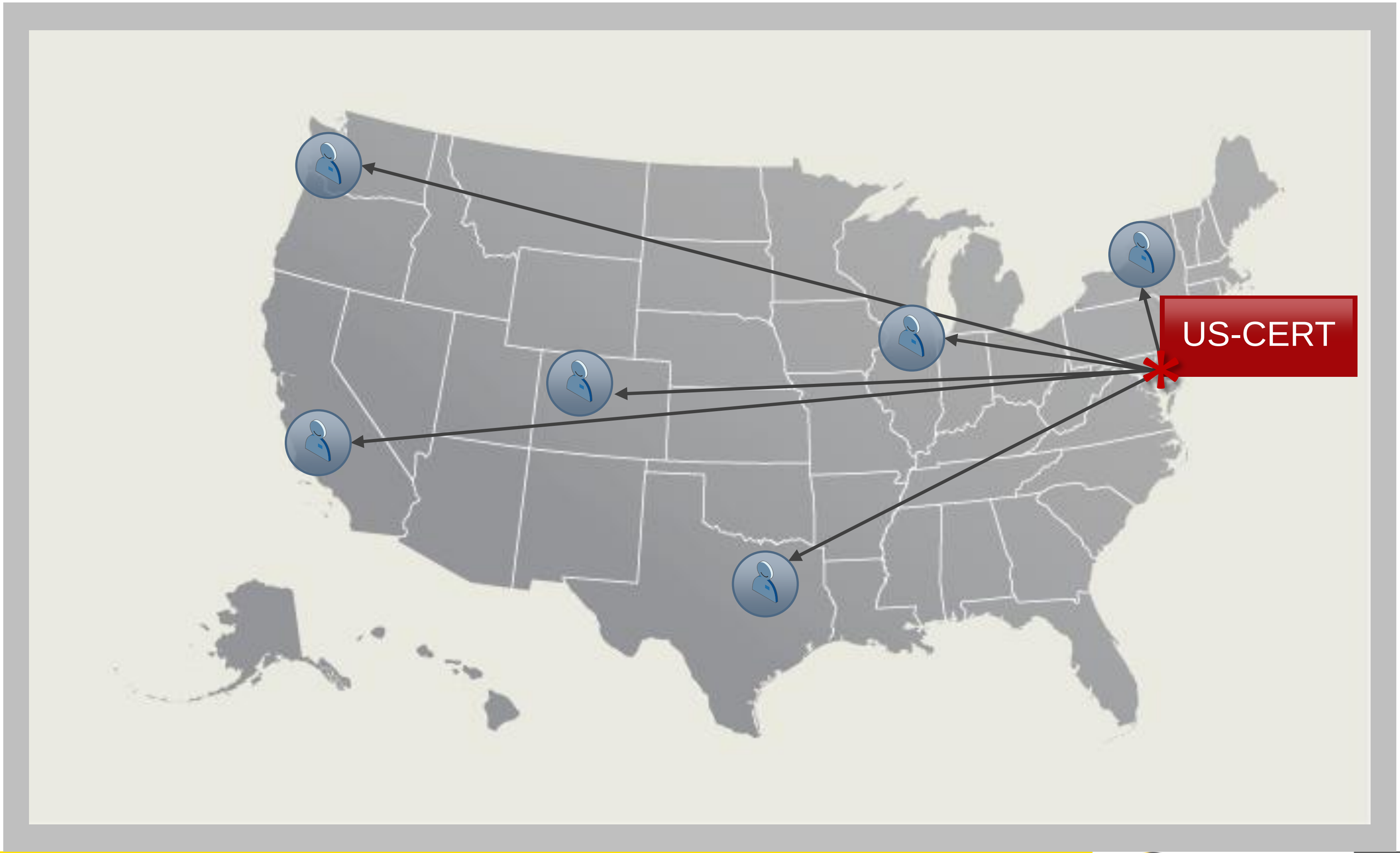
Certification of Personnel

- Who is a cyber security professional?
  - CISSP?
  - NSA Cert holder?
  - Technical cert holder?
  - B.S. or M.S.
  - All of the above
  - None of the above
- Government versus private industry
  - Cross fertilization has always been good
  - Scholarships
    - Government
    - Private colleges and universities

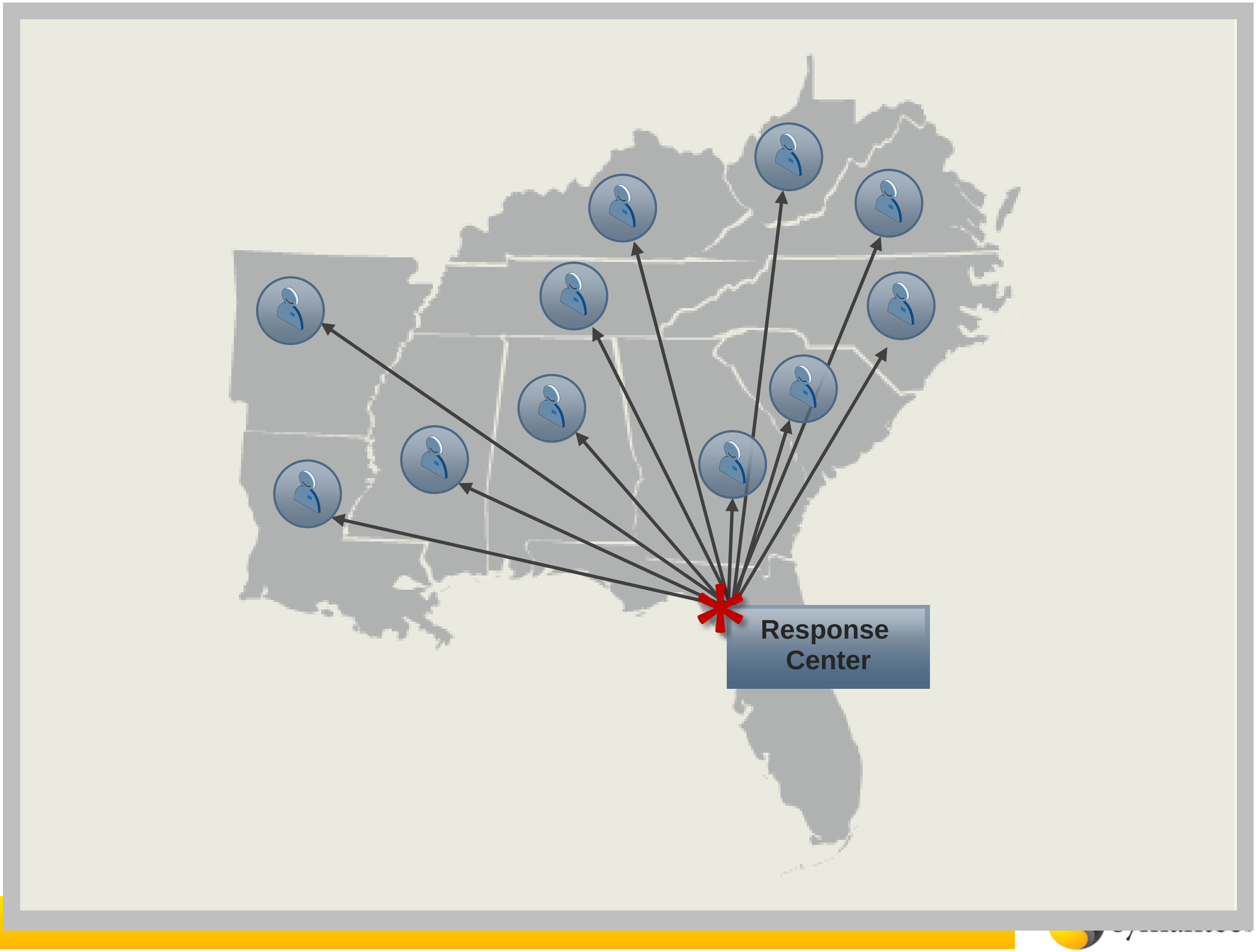

Response
Center


Response Center

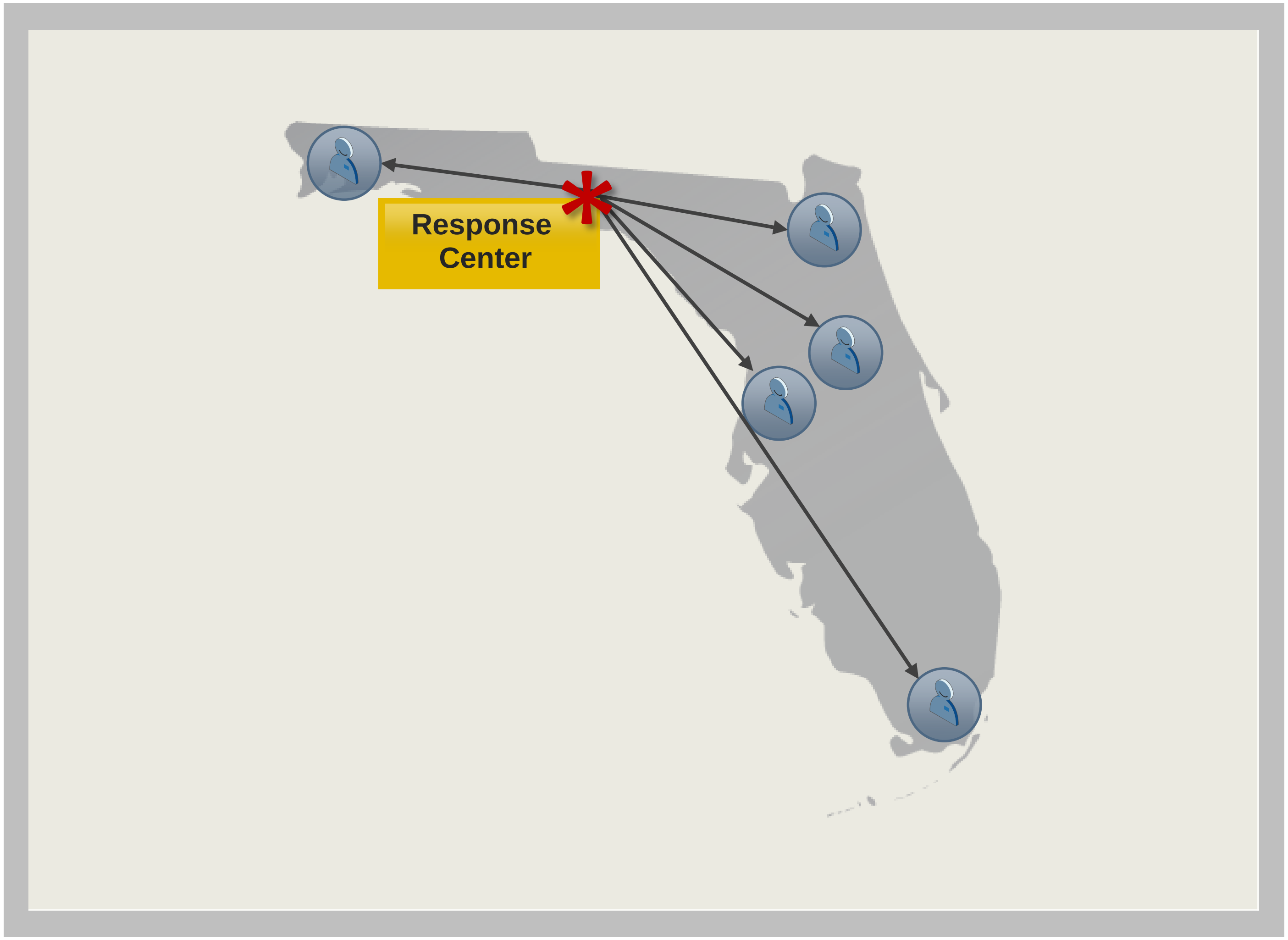

CERT-CC
US-CERT
DoD



US-CERT



Response Center



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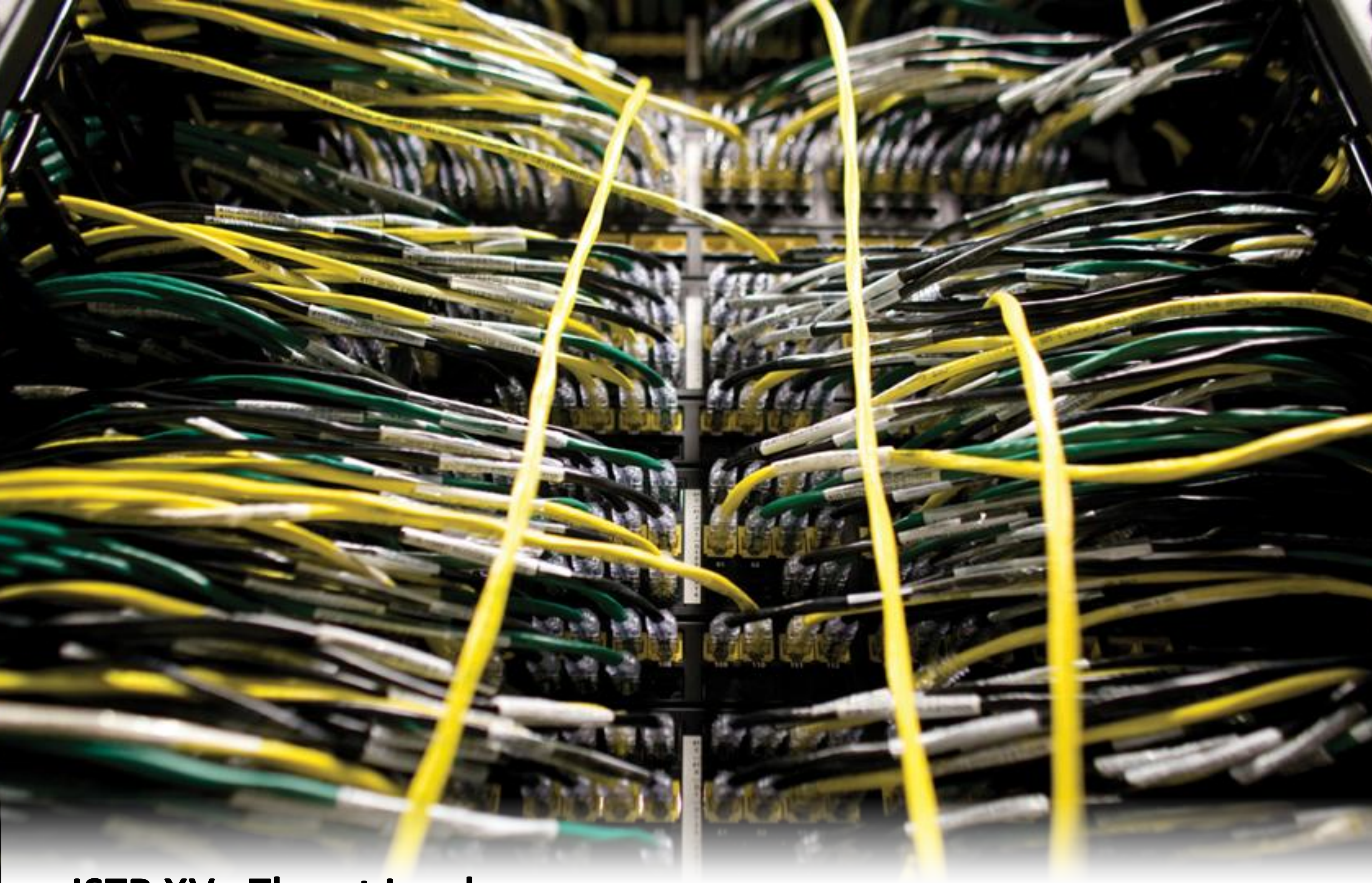


ISTR XV: Threat Landscape

Symantec Security

Global Intelligence, Analysis, Protection

Relevancy

Global Expertise

More researchers

Comprehensive data sources

More virus samples analyzed

Extensive customer support

Accuracy

In-depth Analysis

Signatures: AV,AS,IPS,GEB, SPAM, White lists

DeepSight Database

IT Policies and Controls

Rigorous False Positive Testing

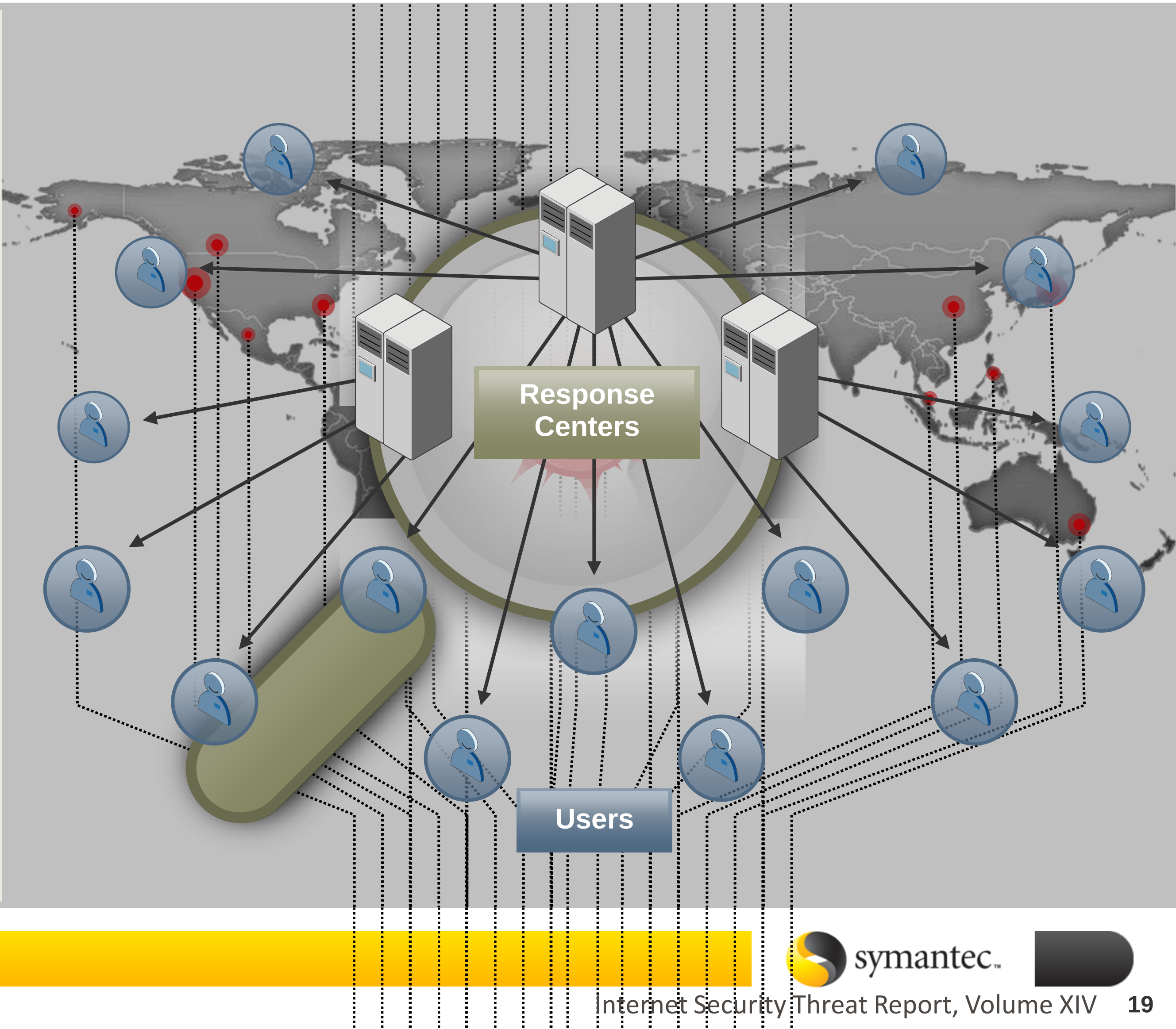
Protection

Automated Updates

Fast & Accurate

Variety of Distribution Methods

Relevant Information

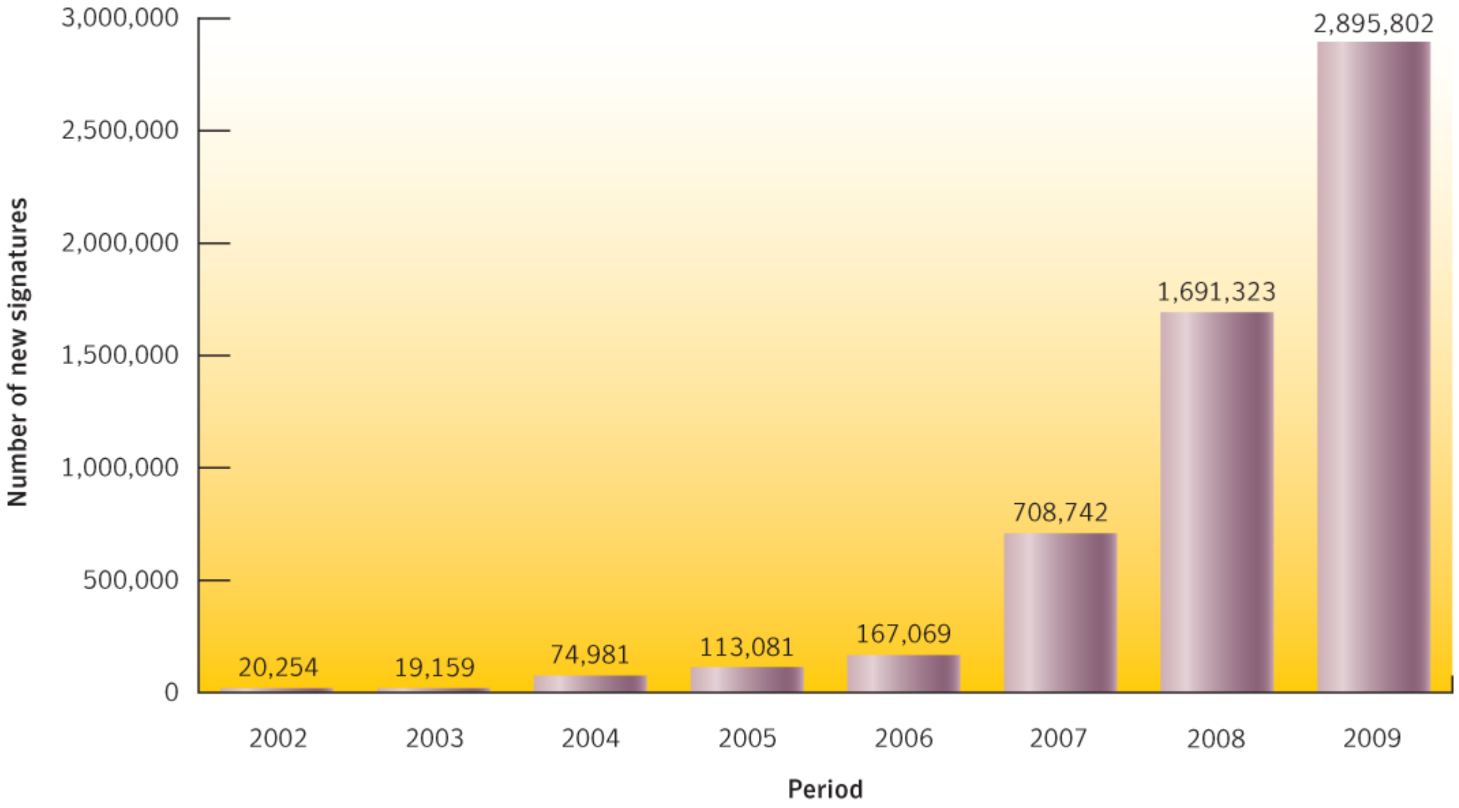


Key Trends in Threat Landscape

- Targeted attacks focus on enterprises
- Web-based attacks still plague users
- Novices enabled with attack kits make theft easy
- Underground economy unaffected by global economy
- Malicious activity takes root in emerging countries

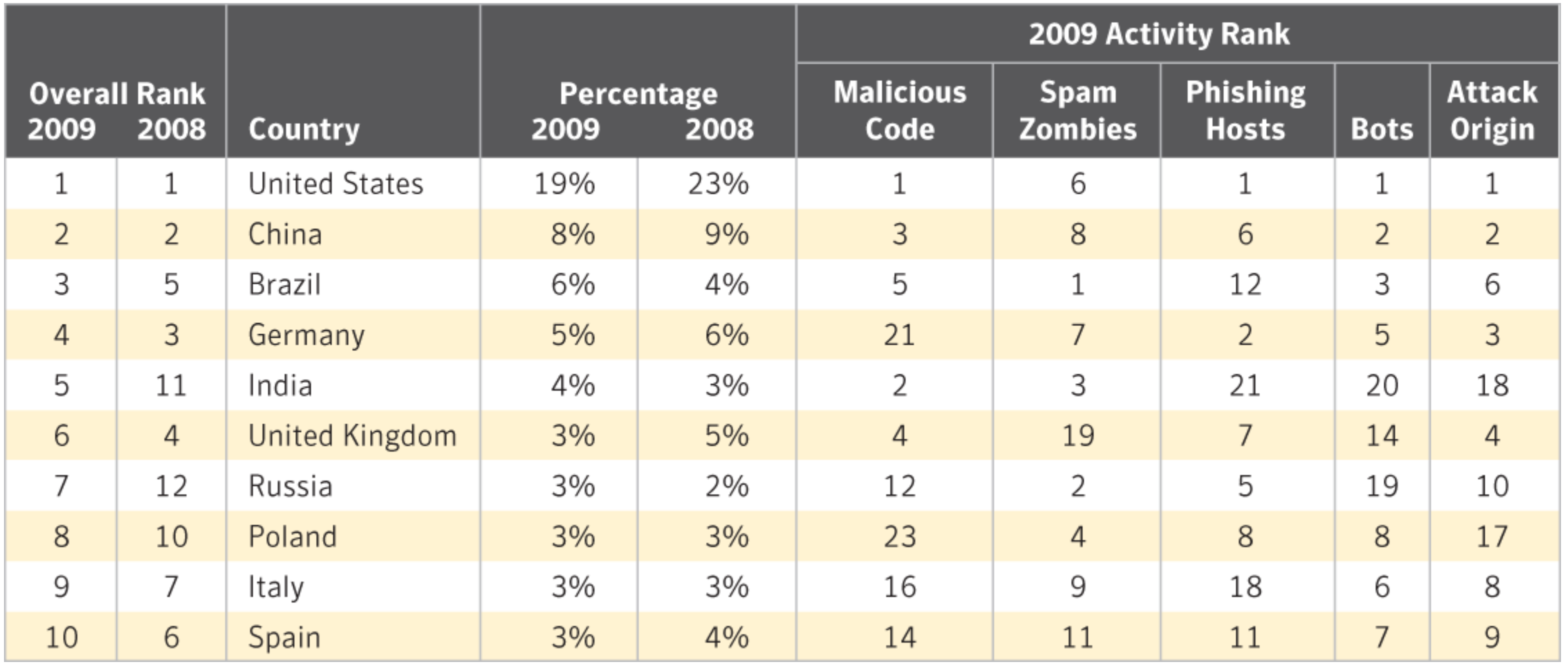
Malicious Code Trends: New Malicious Code Signatures

- A 71% increase over 2008
- 51% of all signatures were created in 2009



Threat Landscape: Malicious Activity in Emerging Countries

- Brazil, India and Poland all saw growth in malicious activity
- Bandwidth attracts cyber criminals
- Cybercriminals move to emerging markets to grow market share

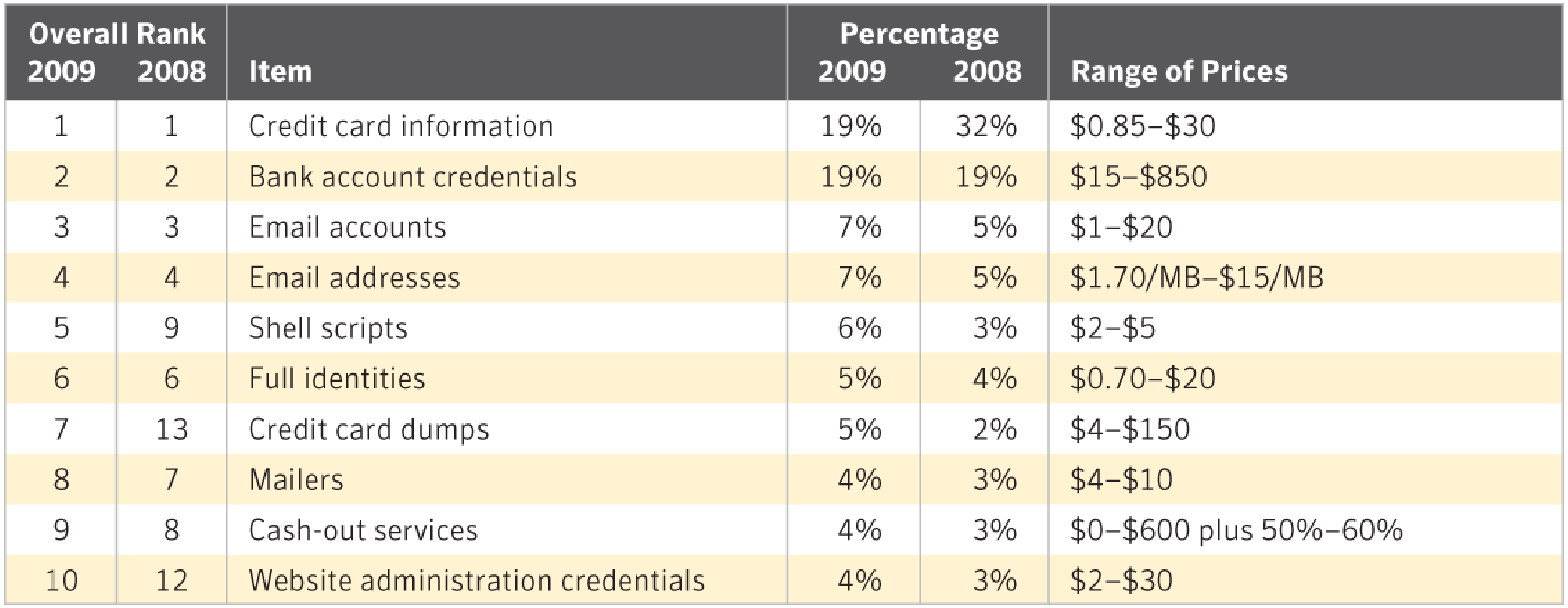


Overall Rank			Percentage		2009 Activity Rank				
2009	2008	Country	2009	2008	Malicious Code	Spam Zombies	Phishing Hosts	Bots	Attack Origin
1	1	United States	19%	23%	1	6	1	1	1
2	2	China	8%	9%	3	8	6	2	2
3	5	Brazil	6%	4%	5	1	12	3	6
4	3	Germany	5%	6%	21	7	2	5	3
5	11	India	4%	3%	2	3	21	20	18
6	4	United Kingdom	3%	5%	4	19	7	14	4
7	12	Russia	3%	2%	12	2	5	19	10
8	10	Poland	3%	3%	23	4	8	8	17
9	7	Italy	3%	3%	16	9	18	6	8
10	6	Spain	3%	4%	14	11	11	7	9

Malicious Activity by Country

Threat Landscape: Underground Economy Still Strong

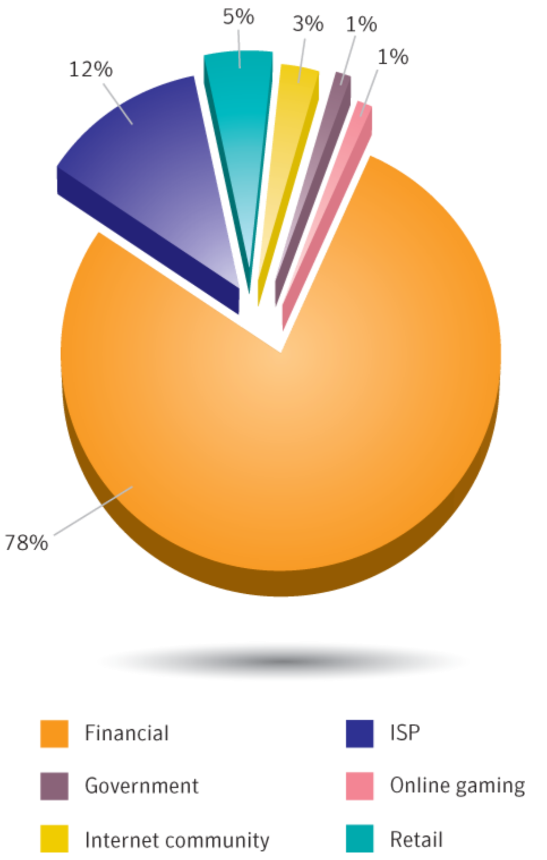
- Top advertised items on underground economy remain:
  - Credit card information
  - Bank accounts details
- Credit card dumps saw a marked increase in advertisements



Overall Rank			Percentage		
2009	2008	Item	2009	2008	Range of Prices
1	1	Credit card information	19%	32%	$0.85–$30
2	2	Bank account credentials	19%	19%	$15–$850
3	3	Email accounts	7%	5%	$1–$20
4	4	Email addresses	7%	5%	$1.70/MB–$15/MB
5	9	Shell scripts	6%	3%	$2–$5
6	6	Full identities	5%	4%	$0.70–$20
7	13	Credit card dumps	5%	2%	$4–$150
8	7	Mailers	4%	3%	$4–$10
9	8	Cash-out services	4%	3%	$0–$600 plus 50%–60%
10	12	Website administration credentials	4%	3%	$2–$30

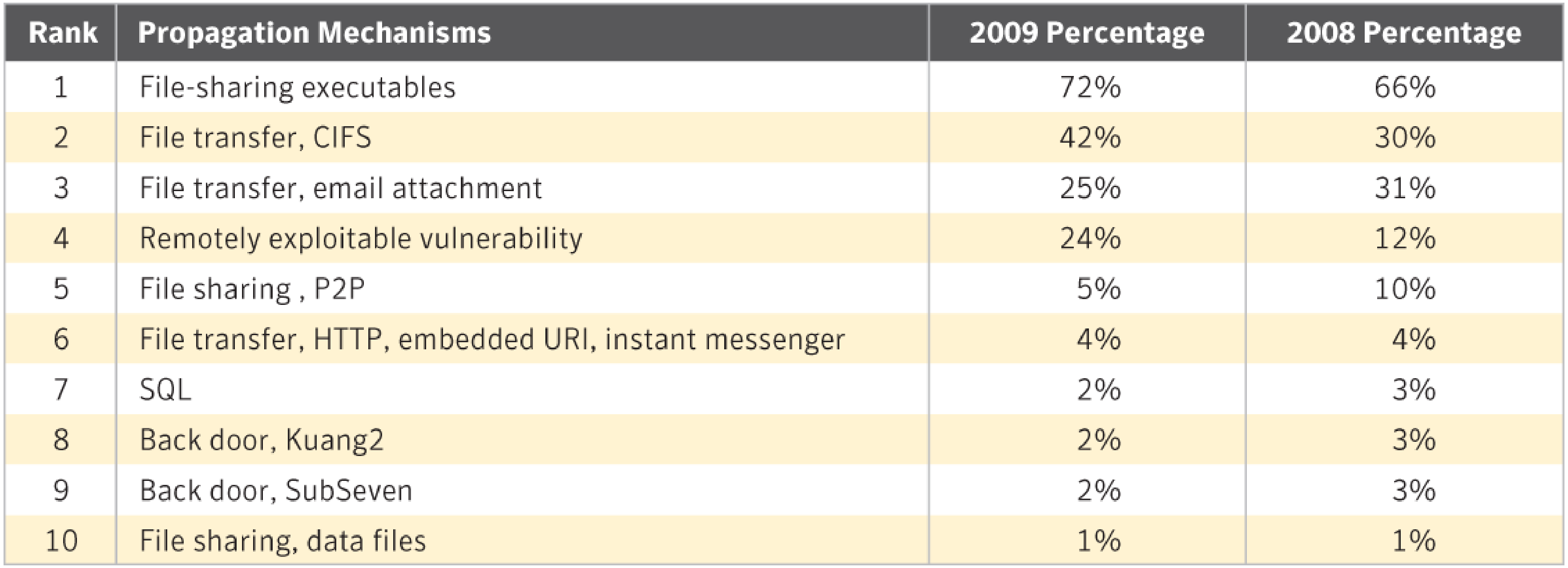
Threat Landscape: Underground Economy Still Strong

- Spammers and phishers continue to targeting financial services
- However, the social engineering reflects current economy
  - Messages incorporate themes of refinancing loans, consolidating debt, reducing credit card interest rates



Malicious Code Trends: How Infection Spreads

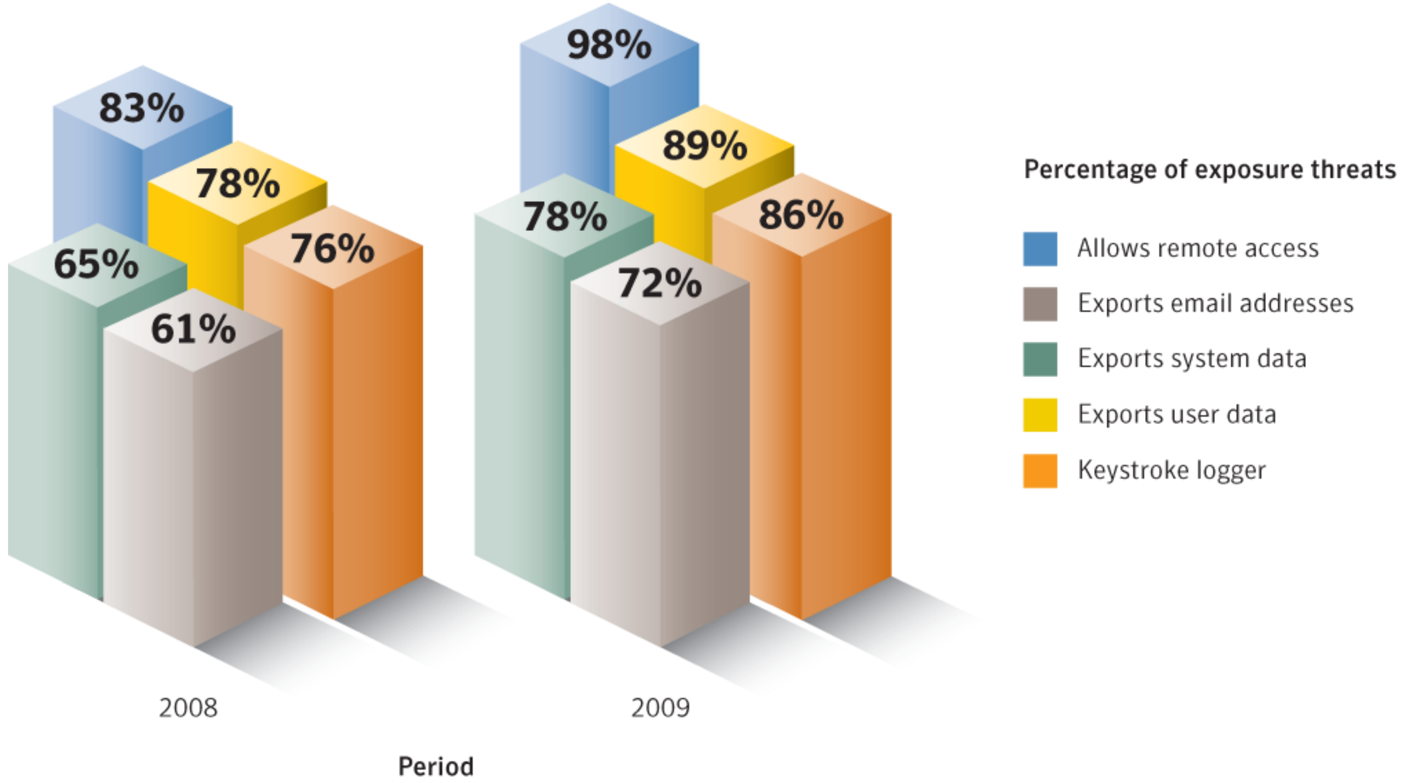
- 72% of malware propagation spreads via file-sharing executables
- Downadup (Conficker) big reason for increase in propagation
  - File-sharing executables were primary means of spreading



Rank	Propagation Mechanisms	2009 Percentage	2008 Percentage
1	File-sharing executables	72%	66%
2	File transfer, CIFS	42%	30%
3	File transfer, email attachment	25%	31%
4	Remotely exploitable vulnerability	24%	12%
5	File sharing , P2P	5%	10%
6	File transfer, HTTP, embedded URI, instant messenger	4%	4%
7	SQL	2%	3%
8	Back door, Kuang2	2%	3%
9	Back door, SubSeven	2%	3%
10	File sharing, data files	1%	1%

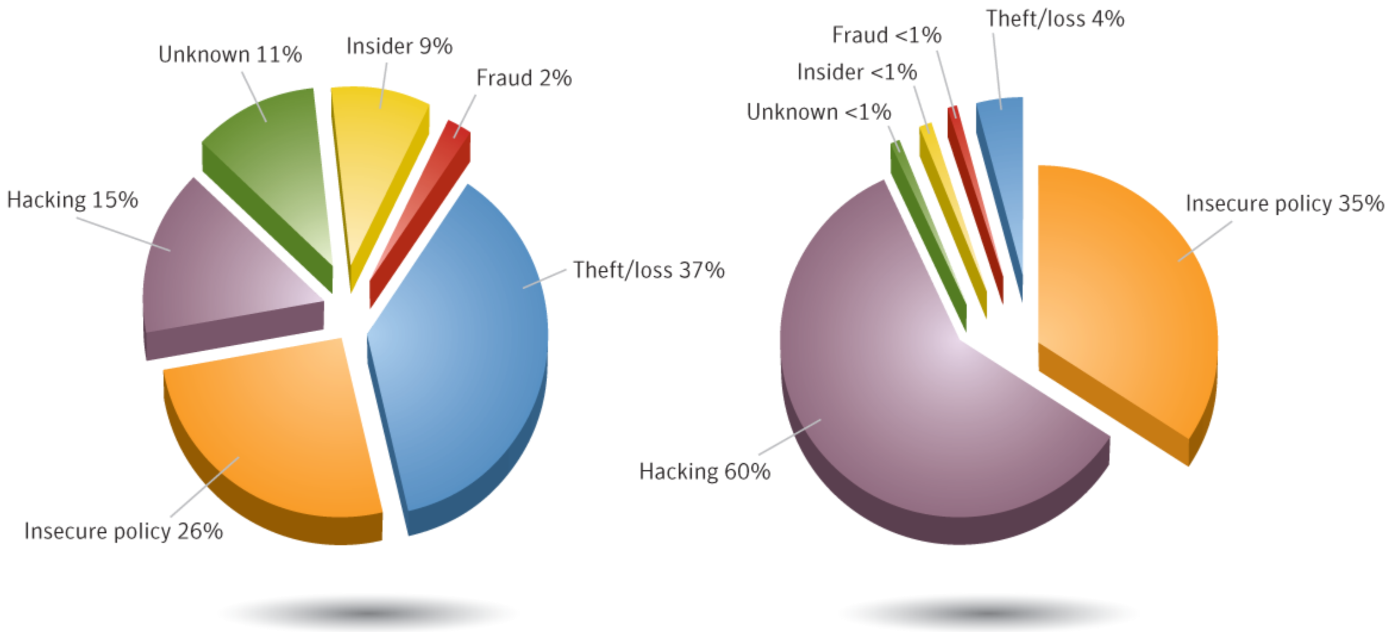
Threat Landscape: Attack Kits Lower Bar for ID Theft

- Almost ¾ of all threats contain more than one type of theft
- Attack kits are driving this trend



Threat Landscape: Targeted Attacks Focus on Enterprises

- Most data breaches are caused by theft or loss of a device, but …
- Hacking resulted in the greatest number of identities exposed



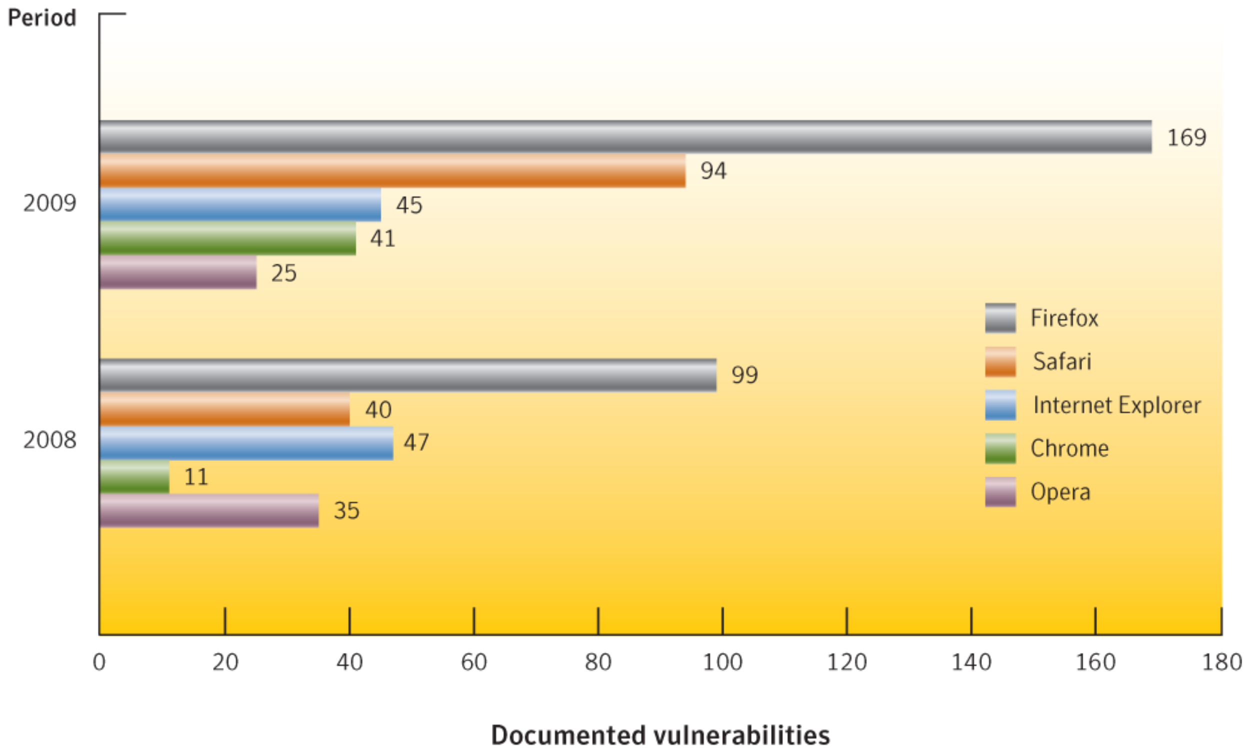
Data breaches

Identities exposed

ISTR XV: Key Facts & Figures

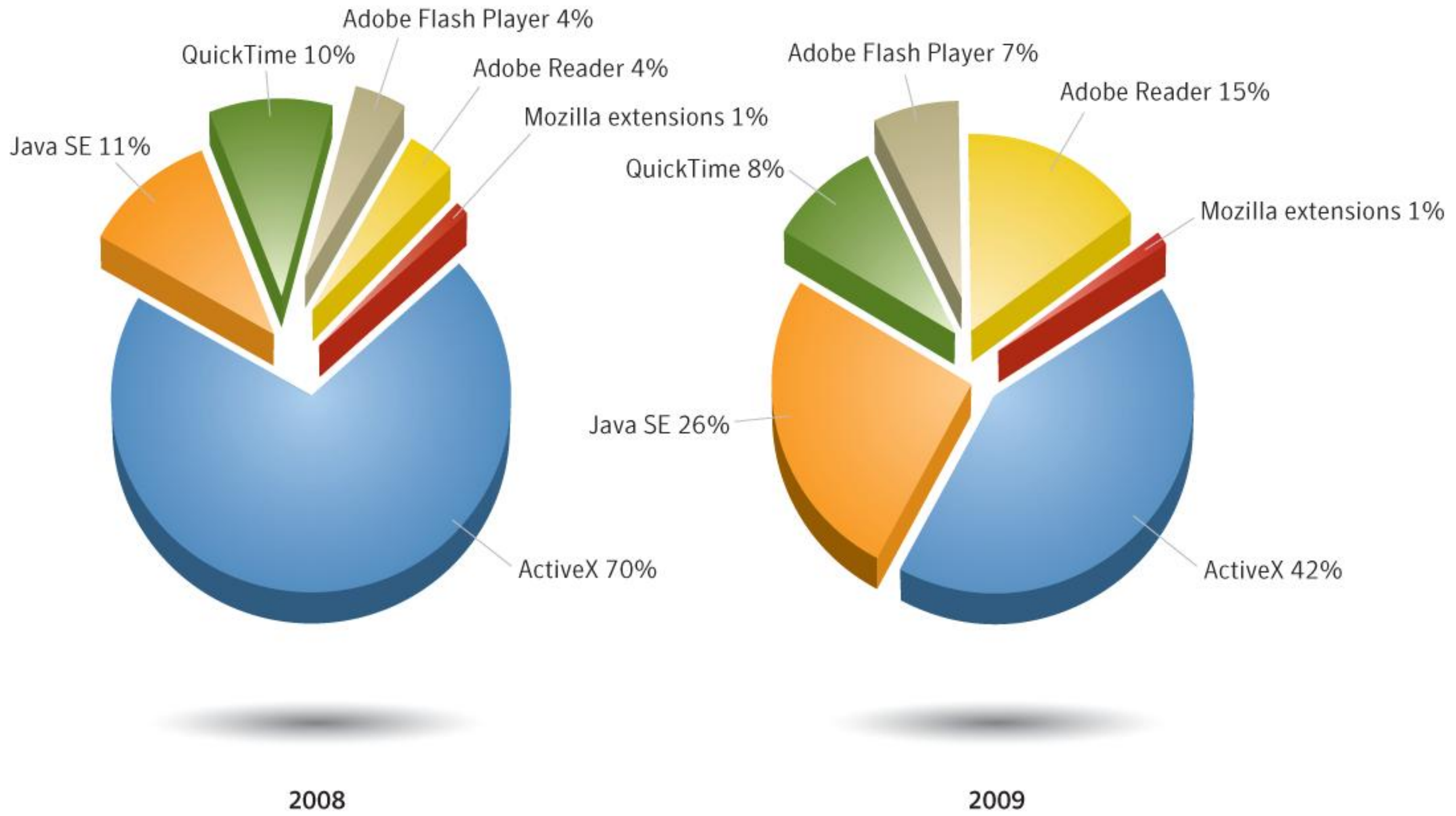
Vulnerability Trends: Web Browser Vulnerabilities

- Firefox had most, but shortest window of exposure
  - Cyber criminals attack popular browsers, not those with most vulnerabilities
- Of 374 Web browser vulnerabilities in 2009, 14% are unpatched



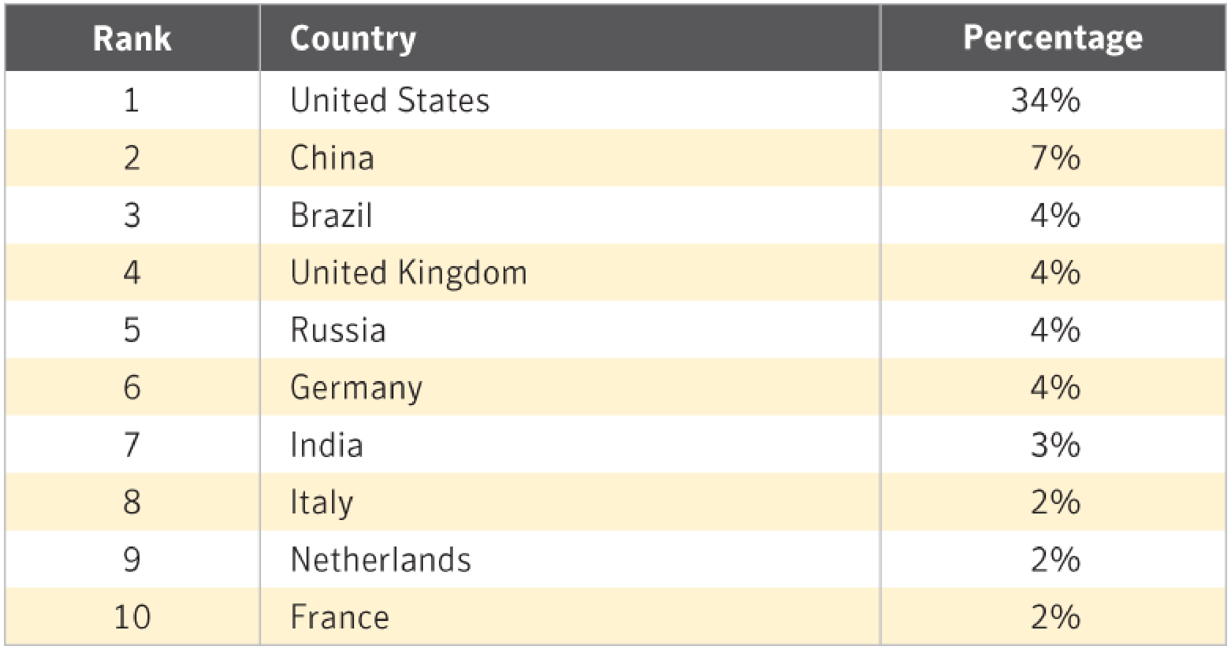
Vulnerability Trends: Web Browser Plug-In Vulnerabilities

- Web browser plug-in vulnerabilities exploited to install malware
- ActiveX had most, but Java and Acrobat grew significantly



Threat Landscape: Malicious Activity in Emerging Countries

- Brazil and India rank highly where Web-based attacks originate
- Web-based attacks may also be partly related to bot activity



Rank	Country	Percentage
1	United States	34%
2	China	7%
3	Brazil	4%
4	United Kingdom	4%
5	Russia	4%
6	Germany	4%
7	India	3%
8	Italy	2%
9	Netherlands	2%
10	France	2%

Countries of Origin for Web-based Attacks

Defending Against Threats

Preventive Security

- Policies
  - Top-down, clear, and enforceable
  - Include unstructured as well as structured data e.g., databases
  - Email, IM, blogging, text, etc.
  - Enforced
- Human Factors
  - Initial and periodic training
  - Ongoing reinforcement
- Technology
  - Easiest issue to address
  - Buying decisions bridge gap between policy and enforcement

Remedial Security

- Bad things will still happen
  - Accepted risk realization
  - Unknown or new threat exploitation
  - Zero-day attacks
- Deal with them by having:
  - Plans
    - In-place
    - Tested
  - People
    - Your staff and other state personnel
    - Outside resources
  - Partners
    - Management support
    - Technology partners who stand by their products

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